AdvanSix

Hopewell
905 East Randolph Road
Hopewell, VA 23860
Tel: (804) 541-5000
Advan6.com

July 25, 2018

Dennis M. Abraham
U.S. Environmental Protection Agency
Region III (3RC10)
1650 Arch Street
Philadelphia, PA 19103
Abraham.Dennis@epa.gov

Kristen Hall
U.S. Environmental Protection Agency
Region III (3AP20)
1650 Arch Street
Philadelphia, PA 19103
Hall.Kristen@epamail.epa.gov

Kyle I. Winter
Deputy Regional Director
Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Kyle.Winter@deq.virginia.gov

Jefferson Reynolds
Enforcement Division Director
Virginia Department of Environmental Quality
1111 East Main Street, Suite 1400
Richmond, VA 23218
Jefferson.Reynolds@deq.virginia.gov

Re: DOJ No. 90-5-2-1-09611 – Semi-annual Report for January 1, 2018 through June 30, 2018 and ELP Compliance Status Report for July 1, 2017 through June 30, 2018

To Whom It May Concern:

AdvanSix Resins & Chemicals LLC ("AdvanSix", formerly Honeywell Resins & Chemicals LLC) is making this submittal pursuant to the Consent Decree in United States of America and Commonwealth of Virginia v. Honeywell Resins &Chemicals LLC ("consent decree"), the reference for which is Civil Action Number: 3:13-cv-00193-REP, and DOJ Case Number: 90-5-2-1-09611.

Paragraph 49 of the consent decree requires that AdvanSix submit a semi-annual report with a status of compliance measures identified in Sections V – XIII of the consent decree. Similarly, Paragraph 35 of Appendix A of the consent decree requires that AdvanSix submit an annual compliance status report regarding compliance with the enhanced leak detection and repair program ("ELP"). Attachment A contains the semi-annual consent decree report and Attachment B contains the ELP annual compliance status report.

If further information is required, please contact me at (804) 541-5119 or by email at Phillip.Sparks@AdvanSix.com.

Regards,

Phillip Sparks
Sr. Environmental Engineer

DISTRIBUTION

T. Love
J. Sheridan
F. Harry
T. Varner
M. Stoneberger
T. Knauer
N. Johnson
J. Reinhardt (VADEQ - PRO)
K. Nicholas (VADEQ – Central Office)

DOCUMENT CERTIFICATION

Facility Name: AdvanSix Resins & Chemicals LLC

Facility Location: 905 East Randolph Road, Hopewell, VA 23860

Type of Submittal Attached: Consent Decree Semi-annual Report for January 1, 2018 through June 30, 2018; and
ELP Compliance Status Report for July 1, 2017 through June 30, 2018

Consent Decree Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

ELP Compliance Status Report Certification: I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents(s), including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to Section 113(c)(3) of the Clean Air Act and 18 U.S.C Sections 1001 and 1341.

Name of Authorized Official: *Frederick P. Harry*

Title: *Site Manager*

Signature:  **Date:** July 25, 2018

Attachment A

Semi-annual Report for January 1, 2018 through June 30, 2018

1. Status of Compliance with Sections V – XIII

Provision	Status
Section V – Area 9 NOx Emission Reductions, Control and Testing	
12. Installation and Operation of first set of NOx Emission Controls (B-Train)	Installation is complete. System is in continuous operation.
13. Installation and Operation of second set of NOx Emission Controls (C-Train)	Installation is complete. System is in continuous operation.
14. Installation and Operation of third set of NOx Emission Controls (A-Train)	Installation is complete. System is in continuous operation.
15. Installation and Operation of fourth set of NOx Emission Controls (E-Train)	Construction on the E-Train SCR system began in April 2017. Due 12/31/2018 (installation), 6/30/2019 (operation).
16. Continuous operation of SCRs, within prescribed limits and methods	For installed NOx Emission Controls (A, B, C-Trains), the site has operated the systems within the requirements of the consent decree. See Section 5 of this Attachment for a description of periods of potential non-compliance with the consent decree during malfunction events which occurred during the reporting period.
17. Conduct initial performance test on SCRs and report results	For installed SCRs (A, B, C-Trains), the site has conducted and submitted performance results.
Section VI – Area 9 CEMS Installation and Operation	
18. Replace the existing EMCAMS with the installation / operation of NOx CEMs as installed	The site has replaced EMCAMS where it has installed CEMS (A, B, C-Trains).
19. Install, certify, calibrate, maintain and operate NOx CEMs for B-Train	Installation is complete. System is in continuous operation.
19. Install, certify, calibrate, maintain and operate NOx CEMs for C-Train	Installation is complete. System is in continuous operation.
19. Install, certify, calibrate, maintain and operate NOx CEMs for A-Train	Installation is complete. System is in continuous operation.
19. Install, certify, calibrate, maintain and operate NOx CEMs for E-Train	The E-Train NOx CEMs will be installed as part of the E-Train SCR project and will be installed and commissioned by 6/30/2019.
20. Conduct Relative Accuracy Test Audits (RATAs) and Compressed Gas Audits (CGAs)	For the installed NOx CEMS, the site has conducted and submitted RATAs and quarterly CGAs.
Section VII – Area 9 PM and Opacity Testing and Monitoring	
21. Conduct particulate matter and opacity performance testing and submit testing report	PM and opacity testing has been completed on the A, B, C, D and E- Trains and the results submitted.

Section VIII – Enhanced Leak Detection and Repair	
22. Implement and comply with the enhanced leak detection and repair plan (ELP)	The site has implemented the enhanced leak detection and repair plan. The ELP compliance status report is provided in Attachment B of this submittal.
Section IX – Benzene Waste NESHAP Audit	
23. Complete consent decree measures for BWON audit	The site has completed the BWON audit requirements of Section IX.
24. Submit audit statement of work	Statement of work was submitted and approved.
25. Enter into contract with third party to conduct BWON audit	Under a contract established with Sage Environmental Consulting, the site had the BWON audit completed.
26. Submit third party audit report	The site submitted the BWON audit report to the VADEQ and EPA.
27. Actions if site's TAB is over 10 Mg/yr	The BWON audit determined the site's TAB to be well less than 10 Mg/yr.
Section X – Miscellaneous Operations and Maintenance Measures	
28. Submit control and monitoring device preventative maintenance and operations plan, review it annually and update as needed.	Plan was submitted and approved in 2013, and last updated in December 2017.
29. Air pollution control practices	Site is implementing good air pollution control practices per the consent decree.
30. Tracking periods of non-operation	Site is keeping written records of startups, shutdowns, malfunctions, non-operation, bypasses per the consent decree.
Section XI – Permits	
31. Incorporate consent decree into new source review and Title V permits	An NSR permit has been issued to the site to incorporate the requirements of this consent decree. The Virginia Department of Environmental Quality reissued the Title V permit in October 2014, incorporating the requirements of the consent decree.
32. Obtain required permits	The site obtained a new source review permit requiring the installation of SCRs on A, B, C, and E Trains. The site also received the Title V Permit in October 2014, incorporating these requirements.
Section XII – Prohibition of Netting Credits or Offsets from Required Controls	
33. Summary	The site is compliant with the general netting prohibition provisions of the consent decree.
34. General netting prohibition	
35. Exception to general netting prohibition	
36. Outside the scope of the general netting prohibition	

Section XIII – Environmental Mitigation	
37. Operate only Tier III (or equivalent) diesel switcher locomotives	The site is operating only Tier III diesel switcher locomotives.
38. Offset credit prohibition	The site has not sought to obtain netting credits for the purchase and use of the Tier III locomotives.
39. Certification	The site submitted the diesel switcher certification required by the consent decree.

2. Description of Problems Encountered or Anticipated

The site has not encountered or anticipated any problems meeting the requirements of the consent decree.

3. Status of Permit Applications or Modifications

See above description in Section 31.

4. Description of Changes Not Authorized by Permit or Regulation

None

5. Description of Non-compliance with Consent Decree

Potential violations of Enhanced LDAR Program ("ELP") requirements in Appendix A of the consent decree are discussed in Attachment B. The potential violations of the consent decree during the reporting period which are not related to the ELP are described below.

TW-17 SCR NOx Short-Term Emission Rates and 95% Control Efficiency (Paragraph 16)

On January 12, 2018, while responding to alarms of the continuous emission monitoring system (CEMs) for nitrogen oxides (NOx), AdvanSix production employees in operating Area 9 noticed the outlet CEMs reading of NOx for the TW-17 stack was locked at a constant value and had been locked since start-up of the tower on January 11, 2018. This outlet NOx reading is utilized to control the feed of ammonia into the selective catalytic reduction (SCR) NOx emissions control device on TW-17. Since the reading was locked and not providing accurate, real-time data, the ammonia feed to the SCR was insufficient to control the NOx emissions to currently permitted levels.

The Modbus communication switch failed after the electrical box containing the switch was damaged from freezing water which then allowed water into the electrical box. The failure of the Modbus switch caused the loss of communication between the CEMs and the DCS. This failure resulted in the locked outlet NOx CEMs reading, impacting the ammonia feed control to the SCR. The event lasted from the time of start-up of TW-17 at 11:17 pm on January 10th until the malfunction of the SCR ammonia feed control was corrected at approximately 12:25 pm on January 12th. During this period of malfunction, the emissions intermittently exceeded the hourly NOx permit limit and the 95% control efficiency requirement. This event was reported to EPA as a potential consent decree violation on January 22, 2018 and information was provided to assert the affirmative defense for malfunction under Paragraph 65 of the consent decree. Full details of this event, including corrective actions, are included in the January 22, 2018 report.

AdvanSix does not believe this event is a violation of the consent decree since the event was a malfunction and the 95% NOx control efficiency requirement is not applicable during periods of start-up or malfunction under Paragraph 16 of the consent decree. Additionally, the affirmative defense was claimed for the malfunction under Paragraphs 65 and 66 of the consent decree since the malfunction resulted in exceedances of the NOx Short Term emission rate and all required information was provided to support this claim.

TW-8 SCR NOx Short-Term Emission Rates and 95% Control Efficiency (Paragraph 16)

On March 29, 2018, while responding to alarms of the continuous emission monitoring system (CEMs) for nitrogen oxides (NOx), AdvanSix production employees in operating Area 9 noticed the outlet CEMs reading of NOx for the TW-8 stack was locked at a constant value. During the immediate troubleshooting, it was determined the outlet NOx reading had been locked since calibration of the analyzer at 4:55 PM on March 28th. This outlet NOx reading is utilized to control the feed of ammonia into the selective catalytic reduction (SCR) NOx emissions control device on TW-8. Since the reading was locked and not providing accurate, real-time data, the ammonia feed to the SCR was insufficient to control the NOx emissions to currently permitted levels.

The fiber optic communication port on the Modbus communication switch failed causing the loss of communication between the CEMs and the DCS. This failure resulted in the locked outlet NOx CEMs reading, impacting the ammonia feed control to the SCR. The event lasted from the time of the Modbus communication switch failure at 4:55 pm on March 28th until the malfunction of the SCR ammonia feed control was corrected at approximately 8:00 am on March 29th. During this period, the emissions intermittently exceeded the hourly NOx permit limit and the 95% control efficiency requirement. This event was reported to EPA as a potential consent decree violation on April 6, 2018 and information was provided to assert the affirmative defense for malfunction under Paragraph 65 of the consent decree. Full details of this event, including corrective actions, are included in the April 6, 2018 report.

AdvanSix does not believe this event is a violation of the consent decree since the event was a malfunction and the 95% NOx control efficiency requirement is not applicable during periods of start-up or malfunction under Paragraph 16 of the consent decree. Additionally, the affirmative defense was claimed for the malfunction under Paragraphs 65 and 66 of the consent decree since the malfunction resulted in exceedances of the NOx Short Term emission rate and all required information was provided to support this claim.

Attachment B

Enhanced LDAR Program (ELP) Compliance Status Report

Period: July 1, 2017 through June 30, 2018

1. Personnel assigned to LDAR functions

The site had the following personnel assigned to LDAR functions during this reporting period, including the estimated percentage of time each job position was dedicated to performing the LDAR functions:

Job Description	Number of Employees	LDAR Functions Performed	% of Time	Notes
LDAR Program Coordinator	1	- Program Oversight - Reporting - Audits - Training - Tracking changes - Approving Certified Low Leak Technology (CLLT) valves and valve packing	30	From July 2017 to June 2018, AdvanSix assigned a member of the environmental staff to oversee the whole LDAR program.
LDAR Contractor	3	- Maintaining LDAR Instruments - Method 21 monitoring and scheduling - Component tagging - Database management - Tracking changes - Tracking repairs / replacements	100	The site has an arrangement for three individuals provided by an LDAR contractor to be responsible for managing the monitoring program.
Area Maintenance Coordinator	5 (1 for each LDAR applicable production area)	- Coordinating leak repairs with maintenance - Coordinating LDAR equipment improvement and/or replacement with maintenance	~ 5	The amount of time dedicated to LDAR leak repairs and equipment replacement/ improvement depends on the number of components in the applicable production area and the leak history. Area 6 requires the most time dedicated to the LDAR program for the coordinators, planners and engineers since it contains the most components.
Area Maintenance Planner	4 (1 for each LDAR applicable production area, 2 areas share a planner)	- Scheduling LDAR equipment repairs, including delay of repair (DOR) components - Scheduling LDAR equipment replacements and/or improvements - Managing new LDAR component installations associated with work orders	~ 5	
Area Production Engineer	5 (1 for each LDAR applicable production area)	- Managing LDAR related process changes - Assisting with LDAR repairs/ replacements/improvements as needed - Managing DOR and delay of improvement (DOI) documentation	~ 5	

2. Non-compliance with the requirements of Appendix A

Enhanced LDAR Program - Installation of a new valve in the Equipment Replacement/ Improvement Program (Appendix A, Paragraph 19) and Management of Change (Appendix A, Paragraph 24)

On March 15th, AdvanSix employees discovered a leaking valve that was not an approved certified low leak technology (CLLT) valve. The valve was believed to be installed during a maintenance outage in November of 2017 on equipment APT-82 in operating Area 6. This issue was reported to EPA as a potential consent decree violation on March 23, 2018 and a follow-up report with the results of the final incident investigation was submitted on April 19, 2018. Full details of this event, including corrective actions, are included in the March 23rd and April 19th reports.

Enhanced LDAR Program - Daily Certification by Monitoring Technicians (Appendix A Paragraph 26)

During the first quarter 2018 internal LDAR program audit, AdvanSix identified the following deficiencies in the daily certifications by the LDAR monitoring technicians:

- 1/3/2018 – Missing the technician signature for the monitoring completed,
- Daily certification forms were not available for 3/14/2018, 3/21/2018, 3/27/2018 and 3/29/2018.

This issue was reported to EPA as a potential consent decree violation on April 9, 2018. Full details of this event, including corrective actions, are included in the April 9, 2018 report.

Enhanced LDAR Program - Daily Certification by Monitoring Technicians (Appendix A Paragraph 26) and Monitoring Methods and Equipment (Appendix A, Paragraph 8)

On March 13th and 14th of 2018, governmental agents were onsite at the facility as part of an unannounced investigation which included the LDAR program. The investigation prevented AdvanSix from complying with the LDAR program because the governmental agents did not allow the site LDAR contractor and the AdvanSix environmental staff to access computer systems, LDAR monitoring instruments, calibration gases and files.

Nonetheless, AdvanSix exercised best efforts to fulfill its compliance obligations under the consent decree by hiring an alternative LDAR monitoring contractor on March 13 and bringing the contractor onsite the same day to complete the repair follow-up monitoring that was due that day. AdvanSix escorted the alternative contractor while onsite and observed all monitoring to ensure the quality of the results. Despite AdvanSix's best efforts, the alternative contractor was unable to meet two of the quality control requirements of the enhanced LDAR program (ELP). These issues were reported to EPA as potential consent decree violations on April 9, 2018. The two requirements were the daily certification for the monitoring performed and an end-of-monitoring shift drift assessment. Full details of this event are included in the April 9, 2018 report.

Additionally, as part of the investigation, governmental agents removed many hard copy LDAR program documents. A number of these documents are available electronically, however other documents such as hand written daily calibration records are only available in a hard copy form. AdvanSix requested copies of the documents that were most critical to compliance, but the governmental agents only allowed AdvanSix to copy the most current records needed to demonstrate compliance. Accordingly, AdvanSix generally copied the records back to January 1,

2018, that were necessary to ensure data were available to complete the Q1 internal audit required by the ELP. To the extent that Appendix A requires AdvanSix to have copies of records that were removed by the governmental agents, AdvanSix may not be in compliance with some of those requirements.

3. Problems encountered in complying with the requirements of Appendix A

As described in Section 2, on March 13th and 14th of 2018, governmental agents were onsite at the facility as part of an investigation that included the LDAR program, and the investigation prevented AdvanSix from fully complying with the LDAR program.

4. Information required in Appendix A, Paragraph 20

The site knows of no valve for which it could not identify an acceptable CLLT valve or CLLT valve packing.

5. Description of LDAR training in accordance with Appendix A, Part I of this Consent Decree

Training Site Employees

The site has established a training protocol for employees involved in LDAR repairs and other LDAR duties. This training is provided once per calendar year as a refresher and to new employees that have site LDAR responsibilities. This protocol was last updated in the second quarter of 2018.

The following LDAR training was provided to site employees during the reporting period:

- LDAR Employees in Area 8/16 (Sept./Oct. 2017, March 2018),
- LDAR employees in the Specialty Chemicals operating area (Nov. 2017),
- LDAR contractor employees (Oct. 2017, June 2018),
- Maintenance employees (Nov. 2017, May 2018),
- LDAR Employees in Area 6 (Oct. 2017, May/June 2018), and
- LDAR Employees in Area 14 (Oct. 2017, May 2018).

The Site LDAR Program Coordinator attended two (2) days of offsite LDAR training in February of 2017 and is scheduled to attend offsite training in the second half of 2018.

Training Contractors

The site has a contractor responsible for managing the monitoring program including monitoring instruments, schedule, documenting changes, and records management. The contractor has its own training program to make sure its employees are competent to execute their duties. The site reviews the contractor training records to make sure the program is executed appropriately.

In addition to the contractor's routine training program, the contractor's site supervisor attended twenty (20) hours of online training on the LeakDAS LDAR database in February of 2018.

6. Deviations identified and corrective actions taken from the QA/QC performed under Appendix A, Part J

Quarterly audits were performed per Appendix A, Paragraph 27. The potential consent decree violations identified during these audits were reported in the 10-day notifications submitted on March 23, 2018 and April 9, 2018, and are included in Section 2 of this Attachment B.

Deviations identified during the quarterly audits and not described in Section 2 of this Attachment are summarized in the following table.

	Audit	Deviation	Corrective Action	Status
1.	Q3 2017	Eleven (11) Open-Ended Lines (OELs) were found.	Operations/Maintenance was notified immediately of the existence of the OELs. All OELs were promptly corrected and Method 21 readings obtained and found to be below the leak definition.	Complete
2.	Q1 2018	Four (4) Open-Ended Lines (OELs) were found.	Operations/Maintenance was notified immediately of the existence of the OELs. All OELs were promptly corrected and Method 21 readings obtained and found to be below the leak definition.	Complete
3.	Q2 2018	Twelve (12) Open-Ended Lines (OELs) were found.	Operations/Maintenance was notified immediately of the existence of the OELs. All OELs were promptly corrected and Method 21 readings obtained and found to be below the leak definition.	Complete

7. Summary of LDAR audit results / deficiencies

Tricord Consulting ("Tricord") conducted the field portion of the third party LDAR audit between November 13, 2017 and November 16, 2017 and the off-site database review. The audit followed the requirements of Appendix A, Part K. The final audit report was submitted to AdvanSix on December 19, 2017. AdvanSix submitted the Third Party LDAR Audit Final Report, including the deficiencies found, and the corrective action plan (CAP) for those deficiencies in the April 17, 2018 letter sent to D. Abraham and K. Hall of EPA Region III, entitled "DOJ No. 90-5-2-1-09611 – Corrective Action Plan for Enhanced LDAR Plan Audit". Please refer to this letter for detailed information on the third party LDAR audit.

The following is a summary of the third party LDAR audit findings and associated corrective actions:

Finding	Corrective Action(s)	Status
1. ***Missed Inspections*** – There were two valves identified in the database review that do not meet the difficult to monitor requirements and were switched to normal to monitor. The site should have reported the quarters where monitoring was missed.	- Include the missed quarterly monitoring of these two valves in the semi-annual Title V deviation report (note: these 2 valves were reclassified as normal to monitor as part of the 2015 3rd party audit and have been inspected each quarter since Q1 2016).	Complete
2. ***Overlooked Components*** – Seven (7) untagged valves in hydrocarbon service were identified during the comparative monitoring as	- Inventory (tag and enter into LeakDAS) four (4) untagged valves identified during the audit in Area 6. - Inventory (tag and enter into LeakDAS) three (3) untagged valves identified during the audit in Area 8/16.	Complete

	missing from the LDAR program.		
3.	***Open Ended Lines (OELs)*** – Twenty-two (22) open-ended lines (1 heavy liquid and 21 light liquid) without control by cap, plug, blind flange or double-blocked valve were identified during the comparative monitoring.	- Correct the OELs by installing a cap, plug, blind flange, or double blocked valve. Conduct Method 21 monitoring of the light liquid OELs to confirm they are not leaking.	Complete

The next third party LDAR audit will be scheduled for the fourth quarter of 2019.

8. Status of CAP pursuant to Part K of Appendix A during the reporting period

Upon receipt of the Third Party LDAR Audit Final Report from Tricord on December 19, 2017, AdvanSix prepared the initial CAP on January 8, 2018 to address the audit findings. All of the corrective actions contained in the CAP were completed by March 19, 2018. The CAP was submitted on April 17, 2018 in the letter sent to D. Abraham and K. Hall of EPA Region III, entitled "DOJ No. 90-5-2-1-09611 – Corrective Action Plan for Enhanced LDAR Plan Audit." At the time of the submittal of this report, AdvanSix has not received any correspondence from EPA regarding the approval/disapproval of all or parts of the CAP; therefore, no further action is currently required under the CAP.

9. Equipment Replacement/Improvement Report pursuant to Part G, Paragraph 23. of Appendix A, including: i. Actions taken to comply with the Equipment Replacement and Improvement Program, including identifying each piece of equipment that was replaced or upgraded, and ii. Schedule for future replacements or upgrades

Repeat >250 ppm Screening Values (Valves and Connectors)

During the reporting period, the following existing valves and connectors in covered process units had either: 1) valves with screening values at or above 250 ppm during any two monitoring events during a rolling 12-month period, or 2) connectors with screening values at or above 250 ppm during any two out of three consecutive monitoring periods, thus requiring replacement/improvement.

Date of Triggering Event	LDAR Tag Number	Covered Equipment Type	Covered Process Unit	Process Unit Shutdown Required?	Replacement/ Improvement Complete Date
11/15/2016	ONE-1 6105	Valve	Area 6	Yes	10/12/2017
6/14/2017	ONE-1 5649	Valve	Area 6	Yes	7/27/2017
7/25/2017	ONE-1 782.3	Connector	Area 6	No	7/26/2017
8/17/2017	ONE-1 5487.1	Connector	Area 6	No	9/6/2017
8/17/2017	ONE-1 5554.1	Connector	Area 6	No	9/6/2017
8/18/2017	ONE-1 5473	Connector	Area 6	No	9/6/2017
9/1/2017	ONE-1 1879	Valve	Area 6	Yes	10/12/2017
9/12/2017	ONE-1 255	Valve	Area 6	Yes	11/21/2017
10/5/2017	ONE-1 3697	Valve	Area 6	Yes	4/26/2018
10/5/2017	ONE-1 5554.1	Connector	Area 6	No	10/6/2017
11/2/2017	LAC-1 573	Valve	Area 8/16	No	11/30/2017
11/2/2017	ONE-1 5575	Valve	Area 6	Yes	4/4/2018

11/2/2017	ONE-1 5554.1	Connector	Area 6	No	11/29/2017
11/2/2017	ONE-1 5735.1	OEL	Area 6	No	11/29/2017
11/2/2017	ONE-1 3383	OEL	Area 6	No	11/29/2017
11/3/2017	ONE-1 5916.2	Connector	Area 6	Yes	4/4/2018
11/21/2017	ONE-1 5716.2	Connector	Area 6	Yes	4/4/2018
11/21/2017	ONE-1 2466.1	Connector	Area 6	No	12/14/2017
11/29/2017	ONE-1 5716.1	Connector	Area 6	Yes	4/4/2018
1/9/2018	ONE-1 584	Valve	Area 6	Yes	4/4/2018
3/7/2018	ONE-1 4326	Valve	Area 6	No	3/21/2018
4/11/2018	ONE-1 4304	Valve	Area 6	No	5/1/2018
5/1/2018	MPO-1 927	Valve	Spec Chem	No	5/10/2018
5/3/2018	ONE-1 4561.4	Connector	Area 6	No	5/15/2018
5/3/2018	ONE-1 5739.3	Connector	Area 6	No	5/4/2018
6/4/2018	ONE-1 2764	Valve	Area 6	No	6/28/2018
6/4/2018	ONE-1 2399	Valve	Area 6	No	6/11/2018
6/4/2018	ONE-1 1842	Valve	Area 6	No	6/7/2018
6/6/2018	ONE-1 1611	Valve	Area 6	Yes	Fall 2018
6/6/2018	ONE-1 4517	Connector	Area 6	No	6/7/2018
6/6/2018	ONE-1 4510	Connector	Area 6	No	6/7/2018
6/6/2018	ONE-1 4471.1	Connector	Area 6	Yes	Fall 2018
6/12/2018	ONE-1 1348.2	Connector	Area 6	No	6/26/2018
6/12/2018	ONE-1 5709	Valve	Area 6	Yes	Fall 2018
6/12/2018	ONE-1 5169	Valve	Area 6	Yes	Fall 2018

Two (2) of these components were identified prior to the reporting period and required a process unit shutdown to replace the component. These 2 valves were replaced during a process unit shutdown in the reporting period.

During the reporting period, twenty-one (21) of these components were replaced/improved within 30 days after the triggering monitoring event, and eight (8) required a process unit shutdown to complete the replacement/improvement.

There were four (4) components at the end of the reporting period that require a process unit shutdown to replace/improve. These 4 components are scheduled to be replaced/improved during the scheduled maintenance outage in the fall of 2018, unless an earlier opportunity becomes available.

Repeat 100 ppm to 250 ppm Screening Values (Valves)

During the reporting period, the following existing valves in covered process units had screening values between 100 ppm and 250 ppm during any two monitoring events during a rolling 12-month period, requiring replacement/improvement during a process unit shutdown.

LDAR Tag Number	Covered Process Unit	Replacement/ Improvement Complete Date
ONE-1 5649	Area 6	7/28/2017
ONE-1 2470	Area 6	3/27/2018
LAC-1 608	Area 8/16	10/26/2017
ONE-1 2158	Area 6	6/1/2018

ONE-1 2818	Area 6	Fall 2018
LAC-1 664	Area 8/16	Fall 2018
ONE-1 2113	Area 6	Fall 2018
ONE-1 2184	Area 6	Fall 2018
ONE-1 2186	Area 6	Fall 2018
ONE-1 2585	Area 6	Fall 2018
ONE-1 2732	Area 6	3/23/2018
ONE-1 2617	Area 6	Fall 2018
ONE-1 5941	Area 6	Fall 2018
ONE-5947	Area 6	Fall 2018
ONE-1 5241	Area 6	6/28/2018
ONE-1 6071	Area 6	Fall 2018
ONE-1 5425	Area 6	6/28/2018
ONE-1 2764	Area 6	6/27/2018
ONE-1 5575	Area 6	4/1/2018
LAC-1 437	Area 8/16	Fall 2018
ONE-1 1714	Area 6	5/11/2018
ONE-1 2543	Area 6	6/1/2018
ONE-1 918	Area 6	Fall 2018
ONE-1 413	Area 6	Fall 2018
ONE-1 6604	Area 6	5/1/2018
ONE-1 848	Area 6	Fall 2018
ONE-1 2501	Area 6	Fall 2018
ONE-1 2619	Area 6	Fall 2018
ONE-1 2806	Area 6	Fall 2018
ONE-1 5438	Area 6	Fall 2018

Four (4) of these valves were identified prior to the reporting period and were replaced during process unit shutdowns in the reporting period.

Many of these valves were replaced during equipment specific process unit shutdowns during the reporting period. Whenever possible, valves that could be isolated during normal operations were replaced/improved prior to the process unit shutdowns to minimize the amount of work performed during the turnarounds.

There were eighteen (18) valves at the end of the reporting period that meet the requirements for replacement/improvement during the next process unit shutdown. These valves are scheduled to be replaced/improved during the scheduled maintenance outage in the fall of 2018, unless an earlier opportunity becomes available.

New Valves

During the reporting period, 135 CLLT valves were added as either new components or replacements for existing components.